

Amendments to the Drawings:

Following Fig. 10 of the Drawings, please add Figure 11, which follows the signature page of this amendment.

## REMARKS

Applicant believes that Count 1 of the present application interferes with US patent No. 6,285,027. However, Applicants' arguments submitted on Dec. 18, 2007, have not persuaded the Examiner to declare an interference

Count 1 reads:

1. A method of effecting mass analysis on an ion stream, the method comprising:
  - (a) passing the ion stream through a first mass resolving spectrometer, to select parent ions having a first desired mass-to-charge ratio;
  - (b) subjecting the parent ions to collision-induced dissociation to generate fragment ions;
  - (c) trapping the fragment ions and any remaining parent ions;
  - (d) periodically releasing pulses of the trapped ions into a time of flight instrument to detect ions with a second mass-to-charge ratio; and
  - (e) providing a delay between the release of the pulses of trapped ions and initiation of push-pull pulses in the time of flight instrument, and adjusting the delay to improve the duty cycle efficiency of ions with the second mass-to-charge ratio.

In a supplemental Advisory Office Action of January 8, 2008, the Examiner has stated:

"[Applicants] argument is not persuasive and is incomplete to responding the features stated in page 2 of the final office action mailed on 10-18-2007. The following are answered for the above-argument:

- 1) The data of original application serial No. 09/676,124 did not indicate "which is a CON of 09/373,337, which is a CON of 08/794,970, which is a CON of 08/645,826, which is a CON of 08/202,505". Therefore, the data of original application serial No. 09/676,124 may be needed to correct;
- 2) Claims 99 and 115 recite the method for operating a Time-Of-Flight mass spectrometer for effecting mass analysis on an ion stream. They are not recited the chemical reaction. Therefore, the drawings must show every feature of the invention specified in the claims 99 and 115 such as a delay device and an adjusting delay device;
- 3) The pulse signal is carried to release individual ion packets. It never had a delay in the pulse signal. Even, if the delay was in the pulse signal, then the delay in the pulse signal is different with the delay recited in claims 99 and 115;
- 4) The above-statements do not recite any meaning that is relative to the limitation "adjusting the delay to improve the duty cycle efficiency of ions with the second mass to charge ratio". Further, Applicant argued that the delay would be inherently in the timing release of individual ion packets, between successive individual packets. How is the delay adjusted when the delay is inherently in the timing release of individual packets, between successive individual packets?

It is noted that Applicant is requested to prove the subject matters (all the limitations) recited in claims 99 and 115 are disclosed in each of the current application and all continuation applications See MPEP 201.07)."

RESPONSE

Applicants offer the following explanation and clarification in response to the above-mentioned items:

**Item 1:** It should be noted that Applicants rely on US Patent No. 5,689,111 as a basis for additional support for the pending Claims. The current application is a continuation in part of 09/808,468 (US 7,019,285), which is a continuation of abandoned application 09/448,857, which is a continuation of 08/971,521 (US 6,020,586), which is a continuation of 08/689,459 (US 5,689,111). This chain of applications is clearly set forth in the corrected filing receipt. The Examiner has requested for Applicant to prove that the subject matter recited in Claims 99 and 115 are disclosed in the current and parent applications. In response, Applicant submits that the current application is a continuation in part of application Ser. No. 09/808,468. The Specification has accordingly been amended to recite the same (see amendments to the Specification). Because the current application is a continuation in part, the Examiners requirement pursuant to MPEP 201.07 is no longer warranted

To the extent that the data of original application Ser. No. 09/676,124 did not cite the chain of applications referenced by the Examiner, it should be noted that application Ser. No. 09/676,124 is abandoned and is not being relied on for support of the Claims. Applicant will therefore not address this issue at this time.

**Item 2:** Applicant maintains that Claims 99 and 115 are method Claims and therefore do not need to show particular devices for carrying out the method. However, in response to the Examiner's rejection, Applicant submits herewith Figure 11, which shows a relative timing diagram of the ion guide exit lens and the time-of-flight repeller lens voltages. Figure 11 is Figure 6 of the parent patent 5,689,111 and is therefore not new matter. Applicant submits that the Drawings now depict a means for "providing" and "adjusting the delay ..." and that every feature of Claims 99 and 115 is shown in the Drawings.

**Item 3:** Applicants believe that the Examiner's rejections in items 3 and 4 were as a result of a fundamental misunderstanding of Applicants' arguments previously submitted. Applicants therefore offer the following clarification: The Examiner appears to be interpreting the 'delay' referred to in step (e) of claims 99 and 115 as a delay between the release of one ion packet and the next ion packet from the ion guide trap. However, Applicants clarify that the delay in Claims 99 and 115 refer to **the delay between the release of one ion packet from the guide and the subsequent pulsing of that ion packet from the TOF pulsing region into the TOF flight tube for mass to charge analysis**. This is explicit in the wording of clause (e), which states: "providing a delay between the

release of the pulses of trapped ions AND initiation of push-pull pulses in the time of flight instrument."

Applicants submit that a misunderstanding could have arisen by an inadvertent omission of a phrase in the Office Action Reply, page 4, lines 13-14. That is, the phrase "providing a delay between the release of the pulses in the time of flight instrument, and adjusting ..." should have read "providing a delay between the release of the pulses **of trapped ions and initiation of push-pull pulses** in the time of flight instrument, and adjusting..."

Applicants further submit that a misleading clause in the following text within the discussion of step (e) may have additionally contributed to the Examiner's misunderstanding:

"This passage first describes a pulse, or packet, of ions of a given length (depending on the trap pulse duration) being pulsed out of the ion guide trap. Then, "As this ion packet moves through lenses 27 and into pulsing region 30 some m/z TOF partitioning can occur ...". In other words, it takes some time for the pulsed ion packet to travel from the ion guide trap to the pulsing region of the TOF, and, obviously, the TOF push-pull pulse would not be activated until the ion packet, or some portion of the packet, has arrived within the TOF 'sweet spot', that is, the region within the TOF pulse region from which ions are able to reach the TOF detector once the TOF pulse occurs. This time delay is expressed explicitly in this passage by "... timing the release of ion packet 52 from ion guide 16 with the TOF pulse of lenses 34 and 35. A time separated m/z ion packet consisting of subpackets 54 and 56 just before the TOF ion pulse occurs is diagramed in FIG. 3." "... timing the release of ion packet... with the TOF pulse..." is the same as 'providing a delay between the trap release of the pulses of trapped ions and the initiation of push-pull pulses in the time of flight instrument' because timing release of individual packets inherently has a delay between successive individual packets. Such a delay is even more explicitly described in the '111 description, as discussed below'"

Instead of stating "because timing release of individual packets inherently has a delay between successive individual packets," it should have said "**because 'timing the release of ion packet 52 from ion guide 16 with the TOF pulse of lenses 34 and 35' implies an inherent delay between the release of ion packet 52 from the ion guide 16 and the TOF pulse of lenses 34 and 35.**"

Applicants believe that having clarified what is Claimed in Claims 99 and 115, the Examiner will now find that these limitations are adequately supported in the instant Specification as well as in that of US 5,689,111.

**Item 4)** The Examiner's reasoning in item 4 seems to carry this misunderstanding of the 'delay'. For example, the Examiner asks, "How is the delay adjusted when the delay is inherently in the timing release of individual packets"? Now, however, with the clarification of item 3) presented above, the response presented in the Office Action Reply of December 18, 2007 regarding step (e) should be better understood. Specifically, the statement found in the instant specification pg. 24, lines 8-10, which state:

"Instead, trapping and the timed release of ions from the multipole ion guide is a preferred method for improving duty cycle.",

describes that the duty cycle is improved by trapping ions in the ion guide and timing their release therefrom, where 'timing' is understood to mean a coordination of, that is, a 'delay' between, the time of release of a pulse of ions from the ion guide, and the time that a TOF pulse occurs. This is explained explicitly in the instant specification as discussed in the Office Action Reply of December 18, 2007, which should now be even more clearly understood, given the improved clarity regarding item 3. In any case, there should be absolutely no confusion regarding step (e) when the descriptions in parent patent '111 are also considered, as was reviewed in the Office Action Reply of December 18, 2007, but which the Examiner seems to have failed so far to take into account.

The Examiner is kindly requested to reconsider the response of December 18, 2007 in light of the above clarification. Applicant believes that as a result of the above clarification and amendments to the specification, the Examiner will agree that the pending Claims are supported by the Specification and interfere with US patent No. 6,285,027.

Applicant is grateful for the Examiner's allowance of an interview after final rejection, but believes that in light of the above it will no longer be necessary. The Examiner is kindly requested to phone the undersigned after considering the above.

Respectfully submitted,

Tuvia Rotberg (58,167)  
LEVI SOHN BERGER, LLP